

## **Green Business Case**

### **City of Belgrade, Montana – 2010 Water Distribution Project**

#### **Green Reserve Project Description**

The project being approved can be generally described as the installation of approximately 19,300 lineal feet of 6-inch to 10-inch PVC water main, including valves, fire hydrants, fittings, service lines, service connections, appurtenances, curbs, gutters and gravel and asphalt replacement. The project also included minor roadway and storm drain improvements and the repair or resurfacing of all areas disturbed during construction including; streets, sidewalks and vegetated areas

#### **Documents submitted and reviewed by the State:**

The city's 2008 Water Master Plan, prepared by Thomas, Dean and Hoskins, Inc. (TD&H), recommends improvements with estimated capital costs of \$28.45 million for water system improvements over the next 20 years. The city of Belgrade has prioritized these needs with improvements to the existing system generally given a higher priority than improvements needed for future development and expansion of the water system. The top priorities included replacing the undersized, leaking 4-inch mains throughout the city.

#### **List of eligible Green Project Reserve components:**

1. Identify the component(s) - See project description
2. Total project cost = \$3,218,000
3. Total 2010 DWSRF Loan/Grant Request = \$3,218,000
4. Total project cost eligible for Green Project Reserve = \$3,057,100 (95%)

#### **Green Reserve Project – Categorical Project:**

This project is not considered categorically green as defined by the USEPA guidance documents.

#### **Green Reserve Project – Business Case Evaluation:**

“As stated in the USEPA March 2, 2009 Memorandum, for traditional projects that are not categorically green, for the project, or components of the project, to be counted towards the 20% requirement, the State project files must contain documentation that a clear business case for the project (or portion) investment includes achievement of identifiable and substantial benefits that qualify as Green Project benefits. The documentation should reference to a preliminary engineering or other planning document that makes clear that the basis upon which the project (or portion) was undertaken included identifiable and substantial benefits qualifying for the Green Project Reserve. The March 12, 2009 USEPA webcast slides 20 and 21 state that two components, the technical component and financial component, must be provided in the Business Case.”

#### **Green Project Reserve Type:**

This project fits in the water efficiency and energy efficiency type.

#### **Technical Component Evaluation:**

The existing Belgrade water distribution system includes approximately 266,000 feet of main ranging from 2-inch to 16-inch. Based on estimates seen in Belgrade's 2008 Water Master Plan, prepared by TD&H Engineering, the existing system loses 35-40% of the water pumped from the six supply wells. This unaccounted for water is primarily the result of old, leaking water mains. The Water Master Plan estimates water leakage from the Belgrade system at 362 gallons per minute (gpm).

According to the Water Master Plan, 4-inch water mains within the distribution system are some of the oldest mains in town and were likely installed in the early 1900's. They are cast iron with lead joints and are believed to be a major source of the system leakage along with their related service lines. The Belgrade distribution system includes over 28,000 lineal feet of 4-inch mains. The North Side 4-inch Water Main Replacement Project will replace approximately 18,000 feet of 4-inch pipe or 64% of the total. Assuming the 4-inch mains account for 15-30% of the system leakage, the Yukon water project will reduce system leakage by approximately 10-20%. Reducing the leakage will conserve water and reduce pumping costs. The 4 inch mains taken out of service will be replaced with 6 to 10 inch mains resulting in reduced friction loss and therefore improved overall system efficiency.

**Financial Component Evaluation:**

The Belgrade water system relies on six groundwater wells and large pumping stations to provide water to the residence of Belgrade. Decreasing the "lost water" documented in the Water Master Plan will reduce the electrical pumping power consumption and its associated cost. Reducing the operation and maintenance costs for the sections of pipe replace would also be expected.

**Green Reserve Project – Evaluation Conclusion:**

The need to replace aging and leaking water mains was one of the main drivers behind this project. Reducing the overall system leakage will also reduce the energy required to pump and treat water for the Belgrade's system. However, system hydraulics, public health and the need to increase fire flows and improve storm drainage were also considered during the selection process. Based on these additional pipe replacement selection criteria, the SRF program will consider only 95% of the total project eligibly for the "green" component.